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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,024	12/28/2001	Kurtis Chad Kelley	8350.0553-00	3804
7590 02/07/2005 Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P. 1300 I Street, N.W. Washington, DC 20005-3315			EXAMINER NGUYEN, TU MINH	
			ART UNIT 3748	PAPER NUMBER

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,024

Applicant(s)

KELLEY ET AL.

Examiner

Tu M. Nguyen

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 122801.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 10-12, 14, 15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Page et al. (U.S. Patent 6,589,314).

Re claim 10, as shown in Figure 2 or 3, Page et al. disclose an apparatus for agglomerating particulate matter in an exhaust flow (lines 19-20 of column 1 and lines 39-40 of column 4), comprising:

- a first exhaust conduit (38) configured to conduct a first stream (52) of exhaust gas having particulate matter;
- a second exhaust conduit (36) configured to conduct a second stream (50) of exhaust gas having particulate matter;
- a charging device (58) operable to selectively impart a positive charge to the particulate matter in the first exhaust conduit and to impart a negative charge to the particulate matter in the second exhaust conduit (lines 43-54 of column 6); and

- a junction (32) connecting the first and second exhaust conduits to form a combined exhaust gas passage.

With regard to the preamble directed to a “an exhaust flow from an engine”, a preamble to a claim is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. See *Kropa v. Robie, supra at 480*. See also *Ex parte Mott*, 190 USPQ 311, 313 (PTO Bd. of App. 1975). Clearly, the pending claim 10 does not rely on the preamble for completeness.

Re claim 11, the apparatus of Page et al. further includes a particulate matter trap (62) disposed in the combined exhaust gas passage.

Re claims 12 and 14, in the apparatus of Page et al., the charging device (58) includes a plurality of positive electrodes disposed in the first exhaust conduit and a plurality of negative electrodes disposed in the second exhaust conduit (lines 54-61 of column 6).

Re claim 15, the apparatus of Page et al. further includes a first ground disposed in the first exhaust conduit and a second ground disposed in the second exhaust conduit (lines 41-46 of column 4).

Re claim 17, the apparatus of Page et al. further includes a ground disposed at the junction (see Figure 2 and lines 41-46 of column 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Page et al. as applied to claim 12 above, in view of legal precedent.

The apparatus of Page et al. discloses the invention as cited above, however, fails to disclose that the positive electrode is configured to apply a positive voltage of at least 8 kV and the negative electrode is configured to apply a negative voltage of at least 7.5 kV.

Page et al. disclose the claimed invention except for specifying optimum ranges of a positive voltage of at least 8 kV and a negative voltage of at least 7.5 kV applied to the positive electrode and negative electrode, respectively. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide specific optimum ranges of voltages to the positive electrode and negative electrode, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page et al. as applied to claims 15 and 17, respectively, above, in view of Yang (U.S. Patent 6,193,934).

The apparatus of Page et al. discloses the invention as cited above, however, fails to specifically disclose that for grounding, a copper screen is utilized around the inner perimeters of the first and second exhaust conduits and around the inner perimeter of the combined exhaust gas passage.

As shown in Figure 3, Yang teaches an emission control system comprising a tubular dielectric barrier plasma reactor (52), is shaped in the form of coaxial cylinders with an inner metal electrode (78) and an outer tube made of glass. A copper screen in contact with the surface of the tube serves as a ground electrode (80) (lines 34-36 of column 7). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the copper screen for grounding as taught by Yang in the apparatus of Page et al., since the use thereof would have provided an apparatus safe to touch.

6. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page et al.

Re claims 1 and 6, as illustrated in Figure 3, Page et al. disclose a method of agglomerating particulate matter in an exhaust gas (lines 19-20 of column 1 and lines 39-40 of column 4), comprising:

- dividing a flow of exhaust gas into at least two streams (50, 52) of exhaust gas, each exhaust gas stream including particulate matter;
- positively charging the particulate matter in one (52) of the at least two streams of exhaust gas;

- negatively charging the particulate matter in the other (50) of the at least two streams of exhaust gas; and

- combining the stream of exhaust gas having the positively charged particulate matter with the stream of exhaust gas having the negatively charged particulate matter (in a common passage (32)).

Page et al., however, fail to specifically disclose that the exhaust gas is from an engine.

On lines 39-40 of column 4, Page et al. state that their invention finds many uses including “the collection of particles for more thorough combustion”. One of ordinary skill in the art immediately recognizes that the aforementioned particles in this particular use are combustible in nature and comprises small particles of elements or compounds of carbon and hydrocarbon fuels. These elements or compounds are known by-products of an earlier combustion process occurred in a furnace or an internal combustion engine. Therefore, it is obvious to one of ordinary skill in the art that the method of Page et al. is applicable in the collection and purification of particulate matters such as soot and hydrocarbon particles in the exhaust gas of an internal combustion engine.

Re claims 2 and 7, the method of Page et al. further includes passing the combined stream of exhaust gas through a particulate matter trap (62).

Re claims 3, 4, 8, and 9, in the method of Page et al., the particulate matter in the one stream (52) of exhaust gas is positively charged by applying a positive voltage thereto and the particulate matter in the other stream (50) of exhaust gas is negatively charged by applying a negative voltage thereto.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Page et al. as applied to claim 1 above, in view of McQuigg et al. (U.S. Patent 6,530,978).

The method of Page et al. discloses the invention as cited above, however, fails to disclose that the characteristic being altered is the temperature of the particulate matter.

As shown in Figure 1, McQuigg et al. teach a system to remove particulate matters from a gas stream comprising passing the gas stream through a indirect gas cooler (24) to reduce the temperature of the gas stream. In this way, the particulate matters, aerosol particles, and water agglomerate together which is then removed from the gas stream (see claim 1). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the gas cooler taught by McQuigg et al. in the method of Page et al., since the use thereof would have provided an effective means to remove particulate matters in the exhaust gas stream.

Prior Art

8. The IDS (PTO-1449) filed on December 28, 2001 has been considered. An initialized copy is attached hereto.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of seven patents: Strubler (U.S. Patent 3,257,779), Brettschneider et al. (U.S. Patent 4,478,613), Dettling et al. (U.S. Patent 4,649,703), Hirth (U.S. Patent 4,765,803), Lee (U.S. Patent 5,885,330), Kammel (U.S. Patent 5,972,215), and Caperan et al. (U.S. Patent 6,224,652) further disclose a state of the art.

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Communication

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu M. Nguyen

TMN

Tu M. Nguyen

February 6, 2005

Primary Examiner

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